

# LINQ Interview Questions And Answers Guide.



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# LINQ Job Interview Preparation Guide.

### Question # 1

What are the three main components of LINQ or Language INtegrated Query?

**Answer:-**

1. Standard Query Operators
2. Language Extensions
3. LINQ Providers

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### Question # 2

How are Standard Query Operators implemented in LINQ?

**Answer:-**

Standard Query Operators are implemented as extension methods in .NET Framework. These Standard Query Operators can be used to work with any collection of objects that implements the IEnumerable interface. A class that inherits from the IEnumerable interface must provide an enumerator for iterating over a collection of a specific type. All arrays implement IEnumerable. Also, most of the generic collection classes implement IEnumerable interface.

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### Question # 3

How are Standard Query Operators useful in LINQ?

**Answer:-**

Standard Query Operators in LINQ can be used for working with collections for any of the following and more.

1. Get total count of elements in a collection.
2. Order the results of a collection.
3. Grouping.
4. Computing average.
5. Joining two collections based on matching keys.
6. Filter the results

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### Question # 4

List the important language extensions made in C# to make LINQ a reality?

**Answer:-**

1. Implicitly Typed Variables
2. Anonymous Types
3. Object Initializers
4. Lambda Expressions

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### Question # 5

Which assembly represents the core LINQ API?

**Answer:-**

System.Query.dll assembly represents the core LINQ API.

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### Question # 6

Why do we use Contains method for strings type functions?

**Answer:-**

Contains method Used to find all matching records From Given string using Matching keywords.



Example-

This Examples returns the Customer Names from Customer tables whose Names have contains "Anders"

```
Public void LinqToSqlStringUsingContains()
{
    Var q = From c In db.Customers _
    Where c.ContactName.Contains("Anders") _
    Select c
    ObjectDumper.Write(q)
}
```

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### Question # 7

What is the use of System.XML.XLinq.dll?

**Answer:-**

System.XML.XLinq.dll contains classes to provide functionality to use LINQ with XML.

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### Question # 8

What is the LINQ file extension that interacts with Code Behinds objects?

**Answer:-**

The extension of the file is .dbml

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### Question # 9

How can we find Sequence of Items in two different array (same Type) in the same order using linq query?

**Answer:-**

```
Public void MatchSequenceLinq()
{
    Var wordsA = {"Rahul","ashok","sweta"};
    Var wordsB = {"rahul","ashok","sweta"};
    var match = wordsA.SequenceEqual(wordsB);
    Console.WriteLine("The sequences match: {0}", match);
}
```

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### Question # 10

List out the Data Context Functions. Where do we use "SubmitChanges()".

**Answer:-**

- Create Database ()
- Delete database ()
- Database Exist ()
- Submit Changes ()
- Create Query()
- Log()

SubmitChanges() - SubmitChanges Data Context Function Used to submit any update to the actual database.

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### Question # 11

Write a program using LINQ to find the sum of first 5 prime numbers?

**Answer:-**

```
class Program
{
    static void Main()
    {
        int[] MyPrimeNumbers = {1,2,3,5,7};
        // Use the Count() and Sum() Standard Query Operators to
        // compute the count and total sum respectively
        Console.WriteLine("The sum of first {0} prime number is {1}",
            MyPrimeNumbers.Count(), MyPrimeNumbers.Sum());
    }
}
```

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### Question # 12

What is Difference between XElement and XDocument?

**Answer:-**

Both are the classes defined by System.Xml.Linq namespace

XElement class represents an XML fragment

XDocument class represents an entire XML document with all associated meta-data.



example:

```
XDocument d = new XDocument(  
    new XComment("hello"),  
    new XElement("book",  
        new XElement("bookname", "ASP.NET"),  
        new XElement("authorname", "techmedia"),  
    )  
);
```

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### Question # 13

What is the benefit of using LINQ on Dataset?

**Answer:-**

The main aim of using LINQ to Dataset is to run strongly typed queries on Dataset.

Suppose we want to combine the results from two Datasets, or we want to take a distinct value from the Dataset, then it is advisable to use LINQ.

Normally you can use the SQL queries to run on the database to populate the Dataset, but you are not able to use SQL query on a Dataset to retrieve a particular values. To get this you need to use ADO.NET functionalities. But, in case of LINQ, it provides more dignified way of querying the Dataset and provides some new features as compared to ADO.NET.

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### Question # 14

What is Linq to SQL Deferred Loading?

**Answer:-**

(C#) - Deferred Loading is a property of Linq to sql, by default it is set true,

Example - Let's have two tables -

Blogs Table (BlogID ,Blog Name,owner) and Post table ( PostID, BlogID, Title, Body)

To find Name and No's of posts in each blog:

```
BlogDataContext ctx = new BlogDataContext();  
var query = from b in ctx.Blogs select b;  
foreach (Blog b in query)  
{  
    Console.WriteLine("{0} has {1} posts", b.BlogName,  
        b.Posts.Count);  
}
```

Output of queries Produce Blog name with no's of post, But For each Blog Looping will be occurs (in case long list of blogs) that's reduces Overall Performance that's called the Deferred loading.

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### Question # 15

Write a Program using Skip and Take operators. How can it beneficial for bulky data accessing on page?

**Answer:-**

Operator used for Paging. Suppose we have Customer table of 100 records. To find 10 records by skipping the first 50 records from customer table-

```
Public void Pagingdatasource ()  
{  
    Var Query = from CusDetails in db.customer skip (50) Take (10)  
    ObjectDumper.Write(q)  
}
```

Hence The Linq SKIP operator lets you skip the results you want, and Take Operator enables you to select the rest of result . So By Using Skip and Take Operator, You can create paging of Specific sequence.

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### Question # 16

Write a Program for Concat to create one sequence of Data Rows that contains Data Tables Data Rows, one after the other?

**Answer:-**

```
(C#)  
Public void Datasetlinq()  
{  
    var numbersA = TestDS.Tables("NumbersA").AsEnumerable();  
    var numbersB = TestDS.Tables("NumbersB").AsEnumerable();  
    var allNumbers = numbersA.Concat(numbersB);  
    Console.WriteLine("All numbers from both arrays:");  
    foreach (object n_loopVariable in allNumbers)  
    {  
        n = n_loopVariable;  
        Console.WriteLine(n["number"]);  
    }  
}
```

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### Question # 17

Differentiate between Conversion Operator `AsEnumerable` and `ToDictionary` of LINQ?

#### Answer:-

`IEnumerable` and `To Dictionary` both are Conversion Operator which are used to solved to conversion type Problems.

`AsEnumerable` operator simply returns the source sequence as an object of type `IEnumerable`. This kind of "conversion on the fly" makes it possible to call the general-purpose extension methods over source, even if its type has specific implementations of them

Signature:

```
public static IEnumerable<T> AsEnumerable<T>
(
    this IEnumerable<T> source
);
```

`ToDictionary` Conversion Operator is the instance of `Dictionary (k,T)` . The `keySelector` predicate identifies the key of each item while `elementSelector`, if provided, is used to extract each single item.

Key and elementSelector Predicate can be Used in following ways-

Example-

```
Public void ToDictionaryExample()
{
    Var scoreRecords=
    {
        new {Name = "Alice",Score = 50 },
        new {Name = "Bob",Score = 40 },
        new {Name = "Cathy", Score = 45}
    };
    Var scoreRecordsDict = scoreRecords.ToDictionary(sr => sr.Name);
    Console.WriteLine("Bob's score: {0}", scoreRecordsDict("Bob"));
}
```

Result: Bob's score: { Name = Bob, Score = 40 }

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### Question # 18

Difference between LINQ and Stored Procedures?

#### Answer:-

There are couple of advantage of LINQ over stored procedures.

1. Debugging - It is really very hard to debug the Stored procedure but as LINQ is part of .NET, you can use visual studio's debugger to debug the queries.
2. Deployment - With stored procedures, we need to provide an additional script for stored procedures but with LINQ everything gets compiled into single DLL hence deployment becomes easy.
3. Type Safety - LINQ is type safe, so queries errors are type checked at compile time. It is really good to encounter an error when compiling rather than runtime exception!
4. PreCompiled - Stored Procedures are precompiled, and LINQ queries need to compile before execution. So stored procedures are fast in performance.

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### Question # 19

What are the four LINQ Providers that .NET Framework ships?

#### Answer:-

1. LINQ to Objects - Executes a LINQ query against a collection of objects
2. LINQ to XML - Executes an XPATH query against XML documents
3. LINQ to SQL - Executes LINQ queries against Microsoft SQL Server.
4. LINQ to DataSets - Executes LINQ queries against ADO.NET DataSets.

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### Question # 20

What is the use of System.Data.DLinq.dll?

#### Answer:-

System.Data.DLinq.dll provides functionality to work with LINQ to SQL.

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### Question # 21

What is `OfType` in linq?

#### Answer:-

```
public void TypeofExa()
{
    Var numbers = {null,1.0,"two", 3,"four",5,"six",7.0 };
    var doubles = from n in numbers where n is doublen;
    Console.WriteLine("Numbers stored as doubles:");
    foreach (object d in doubles)
    {
        Console.WriteLine(d);
    }
}
```

Output:

Numbers stored as doubles:



1  
7

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### Question # 22

What is LINQ?

**Answer:-**

It stands for Language Integrated Query. LINQ is collection of standard query operators that provides the query facilities into .NET framework language like C# , VB.NET.

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### Question # 23

Why can not datareader be returned from a Web Services Method?

**Answer:-**

Because, it is not serializable

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### Question # 24

What is the extension of the file, when LINQ to SQL is used?

**Answer:-**

The extension of the file is .dbml

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### Question # 25

How LINQ is beneficial than Stored Procedures?

**Answer:-**

There are couple of advantage of LINQ over stored procedures.

1. Debugging - It is really very hard to debug the Stored procedure but as LINQ is part of .NET, you can use visual studio's debugger to debug the queries.
2. Deployment - With stored procedures, we need to provide an additional script for stored procedures but with LINQ everything gets compiled into single DLL hence deployment becomes easy.
3. Type Safety - LINQ is type safe, so queries errors are type checked at compile time. It is really good to encounter an error when compiling rather than runtime exception!

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### Question # 26

What is a Lambda expression?

**Answer:-**

A Lambda expression is nothing but an Anonymous Function, can contain expressions and statements. Lambda expressions can be used mostly to create delegates or expression tree types. Lambda expression uses lambda operator => and read as 'goes to' operator.

Left side of this operator specifies the input parameters and contains the expression or statement block at the right side.

Example: myExp = myExp/10;

Now, let see how we can assign the above to a delegate and create an expression tree:

```
delegate int myDel(int intMyNum);
static void Main(string[] args)
{
    //assign lambda expression to a delegate:
    myDel myDelegate = myExp => myExp / 10;
    int intRes = myDelegate(110);
    Console.WriteLine("Output {0}", intRes);
    Console.ReadLine();
    //Create an expression tree type
    //This needs System.Linq.Expressions
    Expression<myDel> myExpDel = myExp => myExp /10;
}
```

No te:

The => operator has the same precedence as assignment (=) and is right-associative.

Lambdas are used in method-based LINQ queries as arguments to standard query operator methods such as Where.

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### Question # 27

What is the LINQ file extension that interacts with Code Behind objects.

**Answer:-**

its .dbml

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### Question # 28

Why Select clause comes after from clause in LINQ?



### **Answer:-**

The reason is, LINQ is used with C# or other programming languages, which requires all the variables to be declared first. From clause of LINQ query just defines the range or conditions to select records. So that's why from clause must appear before Select in LINQ.

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### **Question # 29**

Why cant datareader be returned from a Web Services Method?

### **Answer:-**

Because datareader is not serializable.

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### **Question # 30**

How can you find average of student marks from student tables (Columns are StudentID, Marks)?

### **Answer:-**

```
(C#)
Public void LinqToSqlAverage()
{
    var query = (from p in db. student. Marks).Average();
    Console.WriteLine(q);
}
```

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### **Question # 31**

What is Quantifiers in reference linq to Dataset?

### **Answer:-**

Quantifier Operators return the Boolean value (either True or false) if some or all the elements in a sequence satisfy a condition,

Mainly two Quantifiers in linq:

Any  
All

Examples (vb)

"Any" to determine if any of the words in the array contain the substrng

```
Public Sub ExampleAny()
    Dim words() = {"believe", "relief", "receipt", "field"}
    Dim iAfterE = words.Any(Function(w) w.Contains("ei"))
    Console.WriteLine("There is a word that contains in the
        list that contains 'ei': {0}", iAfterE)
End Sub
```

Result:

There is a word that contains in the list that contains 'ei': True

"All" to return a grouped a list of products only for categories that have all of their products in stock

```
Public Sub Quantifier_All_Exam()
    Dim products = GetProductList()
    Dim productGroups = From p In products _
        Group p By p.Category Into Group _
        Where (Group.All(Function(p) p.UnitsInStock > 0)) _
        Select Category, ProductGroup = Group
    ObjectDumper.Write(productGroups, 1)
End Sub
```

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### **Question # 32**

What are Benefits and Advantages of LINQ?

### **Answer:-**

Benefits and Advantages of LINQ are:

1. Makes it easier to transform data into objects.
2. A common syntax for all data.
3. Strongly typed code.
4. Provider integration.
5. Reduction in work.
6. Performance in the general case doesn't become an issue.
7. Built-in security.
8. LINQ is declarative.

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### **Question # 33**

What is the purpose of LINQ Providers in LINQ?

### **Answer:-**

LINQ Providers are a set of classes that takes a LINQ query and dynamically generates a method that executes an equivalent query against a specific data source.

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### **Question # 34**

What are Quantifiers?

**Answer:-**

They are LINQ Extension methods which return a Boolean value

- 1) All
- 2) Any
- 3) Contains
- 4) SequenceEqual

example:

```
int[] arr={10,20,30};  
var b=arr.All(a=>a>20);
```

-----  
Output:

b will return False since all elements are not > 20.

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### **Question # 35**

Which class extension methods are used in LINQ to SQL?

**Answer:-**

1. System.Linq.Enumerable
2. System.Linq.Queryable
3. None of these

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